

WALCZAK ET AL.
"Method And System for Validating A
Mobile Station Location Fix"
Atty. Docket No. CS10560

Appl. No. 09/769,122
Confirm. No. 5562
Examiner D. Le
Art Unit 2685

1. (Original) A method for validating a non-network based location fix of a mobile station in a communications network, comprising:
5 generating a non-network based location fix of the mobile station;
generating a network based location fix of the mobile station;
evaluating the validity of the non-network based location fix of the mobile station by comparing the non-network based location fix with the network based location fix.

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2. (Currently Amended) The method of Claim 1, generating the non-network based location fix [by] includes receiving global positioning system signals at the mobile station.

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3. (Original) The method of Claim 1, the communications network having a plurality of base stations, generating the network based location fix by measuring a time related parameter of signals received at the mobile station from several base stations neighboring the mobile station.

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4. (Original) The method of Claim 1, translating the network based location fix and the non-network based location fix into a common format prior to comparing the network and non-network based location fixes.

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5. (Original) The method of Claim 1, generating the non-network based location fix of the mobile station in longitude and latitude coordinates, converting the network based location fix to longitude and latitude coordinates before comparing the network based location fix with the non-network based location fix.

10 6. (Original) The method of Claim 1, evaluating the validity of the non-network based location fix by determining whether the non-network based location fix is within a specified range of the network based location fix.

15 7. (Original) The method of Claim 6, defining the specified range based on an estimated velocity of the mobile station and a time interval between the generation of the network based location fix and the non-network based location fix.

20 8. (Original) The method of Claim 1, the communications network having a plurality of base stations, generating the network based location fix by measuring at the mobile station several base station signals neighboring the mobile station, evaluating the validity of the non-network based location fix by determining whether the non-network based location fix is within a specified range of the network based mobile station location fix.

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9. (Original) The method of Claim 1, generating a plurality of network based location fixes of the mobile station, evaluating the validity of the non-networked based location fix by comparing it to at least one of the plurality of network based location fixes.

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10. (Original) The method of Claim 9, evaluating the validity of the non-network based location fix by determining whether the non-network based location fix is closer to a less recently generated network based location fix than it is to a more recently generated network based location fix.

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15. (Original) The method of Claim 1, generating a plurality of network based location fixes of the mobile station, estimating a future location fix of the mobile station based on the plurality of the network based location fixes, evaluating the validity of the non-networked based location fix by determining whether the non-network based location fix is within a specified range of the estimated location fix.

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25. (Original) A method for validating a satellite positioning system based location fix of a satellite positioning system enabled cellular mobile station in a cellular communications network, comprising:

generating a satellite positioning system based location fix of the mobile station;

generating a network based location fix of the mobile station;

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evaluating the validity of the satellite positioning system based location fix by comparing the satellite positioning system based location fix to the network based location fix.

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13. (Original) The method of Claim 12, generating the network based location fix by measuring at the mobile station a time related parameter of signals received from a plurality of cellular base stations of the cellular communications network neighboring the mobile station.

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14. (Original) The method of Claim 12, evaluating the validity of the satellite positioning system based location fix by determining whether the satellite positioning system based location fix is within a specified range of the network based location fix, defining the specified range based on an estimated velocity of the mobile station and a time interval between the generation of the network based location fix and the satellite positioning system based location fix.

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15. (Original) The method of Claim 12, generating a plurality of network based location fixes of the mobile station, storing the plurality of network based location fixes, evaluating the validity of the satellite positioning system based location fix by comparing it to at least one of the plurality of network based location fixes.

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16. (Original) The method of Claim 12, generating a plurality of network based location fixes of the mobile station, ordering the plurality of network based location fixes by applying a corresponding time of acquisition attribute thereto, evaluating the validity of the satellite positioning system based location fix by comparing the satellite positioning system based location fix with the plurality of time stamped network based location fixes.

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17. (Original) The method of Claim 12, generating a plurality of network based location fixes of the mobile station, evaluating the validity of the satellite positioning system based location fix by determining whether it is nearer to a more recent network based location fix than it is to a less recent network based location fix.

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18. (Original) The method of Claim 17, estimating a future location of the mobile station by extrapolating along an estimated path of the mobile station, evaluating the validity of the satellite positioning system based location fix by determining whether the satellite positioning system based location fix is within a specified range of the estimated location fix.

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19. (Original) The method of Claim 12, generating a plurality of network based location fixes by measuring at the mobile station a time related parameter of signals received from a plurality of cellular base stations of the cellular communications network neighboring the mobile station, evaluating

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the validity of the satellite positioning system based location fix by comparing the satellite positioning system based location fix with at least one of the plurality of network based location fixes.

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20. (Original) The method of Claim 12, generating a subsequent satellite positioning system based location fix of the mobile station if a prior satellite positioning system based location fix is invalid.

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21. (Original) A method for validating a location fix of a mobile station, comprising:

generating a plurality of location fixes of the mobile station;

15 evaluating the validity of a recently generated location fix of the mobile station by comparing the location fix for which the validity determination is required to a previously generated mobile station location fix.

22. (Original) The method of Claim 21, evaluating the validity of the location fix for which the validity determination is required by determining whether it is within a specified range of the previously generated location fix.

25 23. (Original) The method of Claim 22, defining the specified range based on an estimated velocity of the mobile station and a time variable.

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24. (Original) The method of Claim 21, evaluating the validity of the location fix for which the validity determination is required by determining whether it is closer to a more recently generated location fix than it is to a less recently generated location fix.

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25. (Original) The method of Claim 21, estimating a future position fix of the mobile station, evaluating the validity of the location fix for which the validity determination is required by determining whether it is within a specified range of the estimated future position fix of the mobile station.

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26. (Original) The method of Claim 25, estimating a velocity of the mobile station, defining the specified range based on the estimated velocity and time interval.

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27. (Original) A cellular mobile station, comprising:
a satellite positioning system signal reception interface in the mobile station for receiving satellite positioning system signals;
a cellular communications network interface in the mobile station for communicating with a cellular communications network;
an information processor coupled to the satellite positioning system signal reception interface and the cellular communications network interface,

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the information processor for evaluating the validity of a satellite positioning system based location fix by comparing it to at least one prior mobile station location fix.

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28. (Original) The mobile station of Claim 27, the information processor for determining a network based mobile station location fix based on signal data stored in memory, the information processor for evaluating the validity of a satellite positioning system based location fix by comparing it to at least one prior network based mobile station location fix.

29. (Original) The mobile station of Claim 28, the information processor for determining the network based mobile station location fix based on cellular base station signal strength data received by the cellular communications network interface.

30. (Original) The mobile station of Claim 27, the information processor for determining a network based mobile station location fix based on a timing relationship between cellular communication network signals received by the cellular communications network interface, the information processor for evaluating the validity of a satellite positioning system based location fix by comparing it to at least one prior network based mobile station location fix.

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31. (Original) The mobile station of Claim 27, the information processor for estimating a future position fix of the mobile station and evaluating the validity of the satellite positioning system based location fix by determining whether it is within a specified range of the estimated future position fix.

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32. (Original) The mobile station of Claim 27, the information processor for evaluating the validity of a satellite positioning system based location fix by determining whether it is within a specified range of at least one prior mobile station location fix.

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33. (Original) The mobile station of Claim 27, the information processor for evaluating the validity of the satellite positioning system based location fix by determining whether it is closer to a more recent prior location fix than it is to a less recent prior location fix.

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